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REMARKS/ARGUMENTS

Claims 1-19 are pending. Favorable reconsideration is respectfully requested.

The present invention relates to a photosensitive composition comprising:

- (A) at least one sensitizer selected from the group consisting of bichromates and chromates;
- (B) a water-soluble high-molecular substance;
- (C) at least one sensitivity improver selected from the group consisting of polyhydric alcohols and ethers; and
- (D) water.

See Claim 1.

The Inventors have discovered that adding a polyhydric alcohol and/or an ether (C) to an aqueous solution of bichromate and/or chromate (A) and a water-soluble high-molecular substance (B) provides a photosensitive composition which (1) shortens the time of exposure, (2) decreases the exposure of high-energy radiation, and (3) improves the productivity of printing press plates or photoetched products. See the present specification at page 2, line 15 to page 3, line 3.

In addition, as described at present specification at pages 11-12, a portion of (C) remains in a formed resist film at the time point that the resist film is exposed through a desired photomask by an ultraviolet ray source, which improves sensitivity. None of the cited references recognize this feature.

The rejection of Claims 1-5 and 8-12 under 35 U.S.C. §103(a) over Ogawa (4,707,433) in view of Uchikawa et al. (6,265,116) or Komano et al. (6,010,824) is respectfully traversed. The cited references fail to suggest the claimed composition.

Ogawa discloses a water-soluble photosensitive material containing gelatin. See the Abstract. The reference describes the use of ethanol as a solvent. See the Examples at

columns 4-7. Ogawa fails to disclose a polyhydric alcohol or an ether as a component of the photosensitive material described therein.

Uchikawa et al. disclose a photopolymerizable composition for a color filter. See the Abstract. The reference describes the use of a solvent at column 6, lines 16-50, and identifies ethanol as an exemplary solvent. Uchikawa et al. identify 3-methoxybutyl acetate as the preferred solvent. See column 6, lines 49-50. That solvent is not a polyhydric alcohol or an ether. This reference fails to describe a water-soluble high-molecular substance or water as a component of the composition disclosed therein.

Komano et al. disclose a photosensitive resin composition containing a polymeric binder, an ethylenically unsaturated monomer, and a photopolymerization initiator. See the Abstract. This reference fails to disclose the use of bichromates or chromates as a sensitizer. The use of a solvent is described at column 12, lines 41-46 and column 17, lines 28-47. Methanol and ethanol are specifically disclosed. Examples 1-3 described at column 23, lines 46-61 contain partially saponified PVA, water, and methanol. None of the other Examples contain water.

The claimed composition is not obvious over the combination of Ogawa and Uchikawa et al. or Komano et al. The essence of the Examiner's argument is that one would be motivated to substitute ethanol as described in Ogawa with any of the solvents described by Uchikawa et al. or Komano et al., some of which fall within the scope of a polyhydric alcohol or an ether specified in (C) of Claim 1, because all of the solvents described in the secondary references are "equivalent." See the Official Action dated March 2, 2004 at page 3, line 1 and the second full paragraph.

However, the composition disclosed by Uchikawa et al. does not contain water or a water-soluble high molecular weight substance. Therefore, the fact that Uchikawa et al. provides a list of solvents for use in the composition described in that reference does not

mean that those solvents are equivalent in a very different composition which contains water or a water-soluble high molecular weight substance as claimed. In fact, Uchikawa et al. explicitly disclose that the preferred solvent is 3-methoxybutyl acetate, which is neither a polyhydric alcohol or an ether. Accordingly, one with Uchikawa et al. in hand would not be motivated to replace ethanol as described in Ogawa with a polyhydric alcohol or ether solvent described by Uchikawa et al.

Komano et al. explicitly describe a composition which contains water and a high molecular weight material (partially saponified PVA, which is presumably water-soluble). See Examples 1-3 at column 23. Komano et al., like Uchikawa et al., provides a list of solvents which includes ethanol and embodiments which are a polyhydric alcohol or an ether. However, in Examples 1-3, the solvent is methanol, which is neither a polyhydric alcohol nor an ether.

Thus, in either Uchikawa et al. or Komano et al., the only solvent used in a composition which contains water and a water-soluble high molecular weight material is methanol. Since methanol is not a polyhydric alcohol or an ether, one with the cited references in hand would not be motivated to replace the ethanol solvent disclosed by Ogawa with any of the polyhydric alcohol or ether solvents disclosed by Uchikawa et al. or Komano et al. Accordingly, there is no *prima facie* case of obviousness over the cited references.

In addition, the experimental data provided in the present specification is striking evidence of nonobviousness. Beginning at page 20 of the specification, the application describes 36 inventive Examples and 9 Comparative Examples. The Table on the following page lists the correspondence between the Examples and the Comparative Examples:

Example	Comparative Example
1	1
8	2
15	3
21	4
27	5
33	6
34	7
35	8
36	9

The compositions used in Examples 1 and 8 contained propylene glycol. The compositions used in Comparative Examples 1 and 2 are the same as the compositions used in Examples 1 and 8, respectively, except that they lack the propylene glycol.

The compositions used in Examples 15, 21, and 27 contained diethylene glycol. The compositions used in Comparative Examples 3, 4, and 5 are the same as the compositions used in Examples 15, 21, and 27, respectively, except that they lack the propylene glycol.

The compositions used in Examples 33-36 contained glycerin. The compositions used in Comparative Examples 6-9 are the same as the compositions used in Examples 33-36, respectively, except that they lack the glycerin.

See page 24 of the specification.

As described at the paragraph bridging pages 26-27 of the specification, the compositions were used to coat a metal substrate. Then, the sensitivity of the resulting resist film was exposed to a vapor lamp to determine the exposure required to allow Step 5 to allow after the exposure process. For the Examiner's convenience, the data presented in the specification in Tables 6-11 has been reformatted as shown below in order to facilitate a direct comparison between the Example and the corresponding Comparative Example.

	<u>Example 1</u>	<u>Comparative Example 1</u>
Exposure to Give Step 5 As Step Sensitivity (mJ/cm <sup>2</sup> )	3,000	8,000

	<u>Example 8</u>	<u>Comparative Example 2</u>
Exposure to Give Step 5 As Step Sensitivity (mJ/cm <sup>2</sup> )	3,000	8,000

	<u>Example 15</u>	<u>Comparative Example 3</u>
Exposure to Give Step 5 As Step Sensitivity (mJ/cm <sup>2</sup> )	500	8,000

	<u>Example 21</u>	<u>Comparative Example 4</u>
Exposure to Give Step 5 As Step Sensitivity (mJ/cm <sup>2</sup> )	1,000	10,000

	<u>Example 27</u>	<u>Comparative Example 5</u>
Exposure to Give Step 5 As Step Sensitivity (mJ/cm <sup>2</sup> )	500	8,000

	<u>Example 33</u>	<u>Comparative Example 6</u>
Exposure to Give Step 5 As Step Sensitivity (mJ/cm <sup>2</sup> )	2,000	8,000

	Example 34	Comparative Example 7
Exposure to Give Step 5 As Step Sensitivity (mJ/cm <sup>2</sup> )	2,000	8,000

	Example 35	Comparative Example 8
Exposure to Give Step 5 As Step Sensitivity (mJ/cm <sup>2</sup> )	3,000	10,000

	Example 36	Comparative Example 9
Exposure to Give Step 5 As Step Sensitivity (mJ/cm <sup>2</sup> )	4,000	12,000

The data presented above convincingly demonstrate that the inventive Examples require a much lower exposure as compared to the corresponding Comparative Example. This is true for each case as shown above. Since the inventive Examples contain component (C) of the claimed composition and the corresponding Comparative Examples do not, the data presented above demonstrate that including component (C) in the composition (1) shortens the time of exposure, (2) decreases the exposure of high-energy radiation, and (3) improves the productivity of printing press plates or photoetched products.

These striking results could not have been predicted from the cited references.

Ogawa discloses a water-soluble photosensitive material containing gelatin and water, but fails to disclose a polyhydric alcohol or an ether. Uchikawa et al. fail to describe a water-soluble high-molecular substance or water as a component of the composition disclosed therein. Komano et al. fail to disclose the use of bichromates or chromates as a sensitizer. Therefore, one with the cited references in hand would not have been able to predict that adding component (C) recited in Claim 1 to (A), (B), and (D) would produce a composition

which (1) shortens the time of exposure, (2) decreases the exposure of high-energy radiation, and (3) improves the productivity of printing press plates or photoetched products, as explicitly demonstrated by the experimental data presented above. Thus, one reading the cited reference would not have been able to predict that a composition containing component (C) would have better film-forming properties as compared to a comparative composition which lacks (C) as demonstrated by the experimental data discussed herein. Accordingly, the experimental presented in the present specification is convincing evidence of non-obviousness.

Applicants also submit herewith the executed Rule 132 Declaration of Toshio Komatsu, an inventor in the above-identified application. The experiments described in the Declaration provide a comparison of the photosensitivity of a photosensitive composition which contains either a polyhydric alcohol or an ether according to the present invention or ethanol or methanol. The experiments described in the Declaration were performed by the method described in the present application. See paragraph (5) of the Declaration. The method for measuring the sensitivity is described in paragraph (9) at page 3 of the Declaration.

The results are shown in Table 1 at page 3 of the Declaration. Paragraph (10) of the Declaration reads as follows:

As shown in Table 1, the photosensitive composition using a polyhydric alcohol or an ether according to the invention is recognized to be higher in the photosensitivity than the photosensitive composition prepared by using methanol or ethanol.

Thus, the results presented in the Declaration demonstrate that neither methanol nor ethanol provide the same increase in photosensitivity provided by a polyhydric alcohol or an ether according to the present invention.



The results presented in the Declaration could not have been predicted from the cited references. Ogawa describes the use of methanol or ethanol, and states that ethanol provides an anti-foaming effect. See column 6, lines 43-44. None of the cited references suggest that component (C) of the claimed composition provides increased photosensitivity as shown by the Declaration.

In view of the foregoing, there is no *prima facie* case of obviousness over Ogawa in view of Uchikawa et al. or Komano et al. Moreover, the experimental data presented in the specification provides striking evidence that the claimed composition is not obvious over the combined disclosure of those references. Accordingly, withdrawal of this ground of rejection is respectfully requested.

The rejection of Claim 13 under 35 U.S.C. §103(a) over Ogawa (4,707,433) in view of Umehara et al. (5,948,592) is respectfully traversed. The cited references fail to suggest the claimed composition.

The deficiencies of Ogawa are discussed above. Umehara et al. has been cited for its disclosure of a preservative. Accordingly, Claim 13 is allowable for the same reasons as Claim 1, discussed above. Withdrawal of this ground of rejection is respectfully requested.

The rejection of Claim 14 under 35 U.S.C. §103(a) over Ogawa (4,707,433) in view of Curtis et al. (4,499,176) is respectfully traversed. The cited references fail to suggest the claimed composition.

The deficiencies of Ogawa are discussed above. Curtis et al. has been cited for its disclosure of a non-ionic surfactant. Accordingly, Claim 14 is allowable for the same reasons as Claim 1, discussed above. Withdrawal of this ground of rejection is respectfully requested.

The rejection of Claims 1-5, 7, 9-12, and 14 under 35 U.S.C. §103(a) over Mino et al. (5,059,509) in view of Uchikawa et al. (6,265,116) or Komano et al. (6,010,824). The cited references fail to suggest the claimed composition.

Mino et al. describe a material for forming multicolor images. See the Abstract. The reference describes a colored layer which is soluble in water. See the Abstract. That layer is described at column 5, line 55 to column 6, line 10. As described therein, the layer contains, *inter alia*, a water-soluble polymeric substance and a photoinsolubilizing agent, which may be a bichromate. Mino et al. also describe that the components of the layer are dissolved or dispersed in water and can be diluted with "water-miscible organic solvents such as alcohols." See column 7, lines 14-15. In the Examples of the reference, isopropyl alcohol is used. See Example 1 at column 9, lines 20-26 and Example 3 at column 10, line 65 to column 11, line 7. Mino et al. fail to disclose the use of a polyhydric alcohol or an ether.

~~————~~ The claimed composition is not obvious over the combination of Mino et al. and Uchikawa et al. or Komano et al. The essence of the Examiner's argument is that one would be motivated to substitute isopropyl alcohol as described in Mino et al. with any of the solvents described by Uchikawa et al. or Komano et al., some of which fall within the scope of a polyhydric alcohol or an ether specified in (C) of Claim 1, because all of the solvents described in the secondary references are "equivalent." See the Official Action dated March 2, 2004 at page 7, first full paragraph.

However, the composition disclosed by Uchikawa et al. does not contain water or a water-soluble high molecular weight substance. Therefore, the fact that Uchikawa et al. provides a list of solvents for use in the composition described in that reference does not mean that those solvents are equivalent in a very different composition which contains water or a water-soluble high molecular weight substance as claimed. In fact, Uchikawa et al. explicitly disclose that the preferred solvent is 3-methoxybutyl acetate, which is neither a

polyhydric alcohol or an ether. Accordingly, one with Uchikawa et al. in hand would not be motivated to replace ethanol as described in Mino et al. with a polyhydric alcohol or ether solvent described by Uchikawa et al.

Komano et al. explicitly describe a composition which contains water and a high molecular weight material (partially saponified PVA, which is presumably water-soluble). See Examples 1-3 at column 23. Komano et al., like Uchikawa et al., provides a list of solvents which includes ethanol and embodiments which are a polyhydric alcohol or an ether. However, in Examples 1-3, the solvent is methanol, which is neither a polyhydric alcohol nor an ether.

Thus, in either Uchikawa et al. or Komano et al., the only solvent used in a composition which contains water and a water-soluble high molecular weight material is methanol. Since methanol is not a polyhydric alcohol or an ether, one with the cited references-in-hand would not be motivated to replace the isopropyl alcohol solvent disclosed by Mino et al. with any of the polyhydric alcohol or ether solvents disclosed by Uchikawa et al. or Komano et al. Accordingly, there is no *prima facie* case of obviousness over the cited references.

In addition, the striking experimental data set forth in the specification of the present application could not have been predicted from the cited references.

Mino et al. fail to disclose the use of a polyhydric alcohol or an ether. Uchikawa et al. fail to describe a water-soluble high-molecular substance or water as a component of the composition disclosed therein. Komano et al. fail to disclose the use of bichromates or chromates as a sensitizer. Therefore, one with the cited references in hand would not have been able to predict that adding component (C) recited in Claim 1 to (A), (B), and (D) would produce a composition which (1) shortens the time of exposure, (2) decreases the exposure of high-energy radiation, and (3) improves the productivity of printing press plates or

photoetched products, as explicitly demonstrated by the experimental data presented above. Thus, one reading the cited reference would not have been able to predict that a composition containing component (C) would have better film-forming properties as compared to a comparative composition which lacks (C) as demonstrated by the experimental data discussed herein. Accordingly, the experimental presented in the present specification is convincing evidence of non-obviousness.

In view of the foregoing, there is no *prima facie* case of obviousness over Mino et al. in view of Uchikawa et al. or Komano et al. Moreover, the experimental data presented in the specification provides striking evidence that the claimed composition is not obvious over the combined disclosure of those references. Accordingly, withdrawal of this ground of rejection is respectfully requested.

The rejection of Claims 6 and 13 under 35 U.S.C. §103(a) over Mino et al in view of Umehara et al. is respectfully traversed. The cited references fail to suggest the claimed composition.

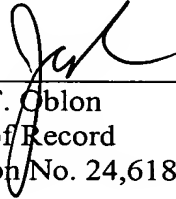
The deficiencies of Mino et al. are discussed above. Umehara et al. has been cited for its disclosure of "specifics about the casein." Accordingly, Claims 6 and 13 are allowable for the same reasons as Claim 1, discussed above. Withdrawal of this ground of rejection is respectfully requested.

Application No. 10/091,314  
Reply to Office Action of March 2, 2004

Applicants submit that the present application is in condition for allowance. Early notice to this effect is earnestly solicited.

Respectfully submitted,

OBLON, SPIVAK, McCLELLAND,  
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